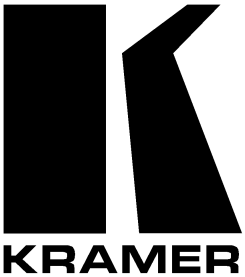
Kramer Electronics, Ltd.



USER MANUAL

Optical DVI Extension Cable Models:

C-FODM/FODM-33

C-FODM/FODM-66

C-FODM/FODM-98

C-FODM/FODM-164

C-FODM/FODM-328

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1 Introduction

Welcome to Kramer Electronics (since 1981): a world of unique, creative and affordable solutions to the infinite range of problems that confront the video, audio and presentation professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 350-plus different models now appear in 8 Groups[1], which are clearly defined by function. Congratulations on purchasing your Kramer Optical DVI Extension Cable, which is available in these models: **C-FODM/FODM-33, C-FODM/FODM-66, C-FODM/FODM-98, C-FODM/FODM-164,** and/or **C-FODM/FODM-328**.

The unique Kramer Optical DVI Extension Cable is ideal for extending the distance of DVI signals[2] without the need for a Repeater. For example, the **C-FODM/FODM-328** can be used to extend to up to 100 meters. The package includes the following items:

- Optical DVI Extension Cable: **C-FODM/FODM-33, C-FODM/FODM-66, C-FODM/FODM-98, C-FODM/FODM-164,** or **C-FODM/FODM-328**
- This user manual[3]

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual

3 Overview

The Kramer Optical DVI Extension Cable is available in these models:
C-FODM/FODM-33 (can extend the DVI signal up to 33 ft / 10 meters),
C-FODM/FODM-66 (can extend the DVI signal up to 66 ft / 20 meters),
C-FODM/FODM-98 (can extend the DVI signal up to 98 ft / 30 meters),
C-FODM/FODM-164 (can extend the DVI signal up to 164 ft / 50 meters), and
C-FODM/FODM-328 (can extend the DVI signal up to 328 ft / 100 meters).

Figure 1 illustrates the Kramer Optical DVI Extension Cable:

1 GROUP 1: Distribution Amplifiers; GROUP 2: Video and Audio Switchers, Matrix Switchers and Controllers; GROUP 3: Video, Audio, VGA/XGA Processors; GROUP 4: Interfaces and Sync Processors; GROUP 5: Twisted Pair Interfaces; GROUP 6: Accessories and Rack Adapters; GROUP 7: Scan Converters and Scalers; and GROUP 8: Cables and Connectors

2 Limited to 5 meters

3 Download up-to-date Kramer user manuals from: http://www.kramerelectronics.com

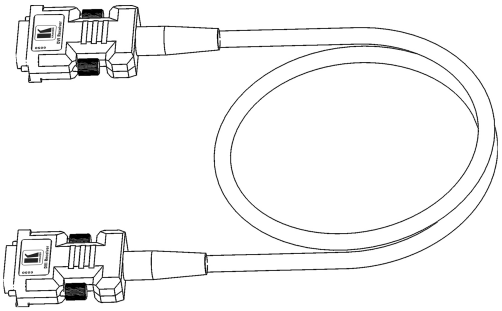

Figure 1: Optical DVI Extension Cable

3.1 System Requirements for Setup (Hardware)

You must have a DVI graphic controller or card that:

- Has a DVI port in your PC, SUN or Mac system
- Supports the maximum graphic resolution of the display that you want to connect

There are no special requirements regarding:

- The memory size, CPU speed and chipsets, if the DVI graphic controller or card is properly installed
- Software, if the DVI graphic controller or card is properly installed in your Operating System

Power Technical Advisory: The Kramer Optical DVI Extension Cable is designed to use +5V internal power supplied through a DVI pin (#14) from the graphic card. Generally, most computers are incapable of simultaneously powering two Kramer Optical DVI Extension Cables.

4 Using Your Optical DVI Extension Cable

This section describes how to:

- Install the Optical DVI Extension Cable (see section 4.1)
- Avoid pitfalls when using it (see section 4.2)

4.1 Installing Your Optical DVI Extension Cable

To connect the Optical DVI Extension Cable, do the following:

1. Carefully remove your Optical DVI Extension Cable from its packaging.
2. Plug the Transmitter module of the Optical DVI Extension Cable **directly** into the DVI receptacle of the computer.
   Do NOT use any intermediate cable or adapter between them.
   The Optical DVI Extension Cable uses only the power +5V supplied

through a DVI pin (#14) from the graphic card.
If the system does not work properly after the Optical DVI Extension Cable is installed, check that your computer system is capable of supplying more than 500mA.

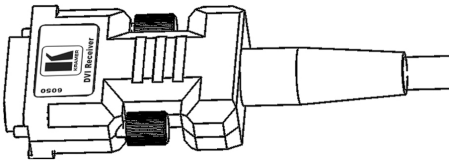

Figure 2: Optical DVI Extension Cable Connector

3. Plug the Receiver module of the Optical DVI Extension Cable into the DVI display receptacle.
   Do NOT use any intermediate cable or adapter between them.
4. Turn ON the power on both the computer and the display device.
   You can replace any DVI cable or an Optical DVI Extension Cable with another Optical DVI Extension Cable by following the above procedures while the computer and display device are powered up.

4.2 Avoiding Pitfalls using the Optical DVI Extension Cable

Be aware of the following:

- **If the display device shows only a black screen** – be sure that the DVI ports are firmly plugged into the computer and the display device, and be sure that the Transmitter and Receiver modules are correctly plugged into the PC and display device, respectively. Check if the PC and display are powered ON and properly booted. Reset the system by unplugging and then replugging the Transmitter DVI port or Receiver DVI port. Reboot the system while connecting the optical DVI cable system
- **Screen is distorted or displays noises** - check if the graphics resolution is properly set. Go to the Display Properties of Windows and tap the settings. Be sure that the resolution sets less than UXGA (1,600 x 1,200) at 60Hz refresh ratio. Reset the system. Disconnect and reconnect the optical DVI cables
- **Maintenance** - these cables contain sensitive fiber optic materials that can be damaged through rough handling. Use caution during the installation and use of these cables to ensure that you do not damage them. Do not install the cable in any environment where it is possible they could be stepped on, run over, pinched or crushed.
- Be sure that the cables are stored and used away from liquid or dirt

5 Technical Specifications

Table 1 includes the technical specifications:

Table 1: Technical Specifications[1]

Compliance with DVI Standard:	Supports DVI1.0 and DDC2B, fully implemented by fiber-optic communication, HDCP compatible
Extension Limit:	100m (>320 feet) for UXGA (1600 x 1200) at 60Hz refresh rate
Graphic Transmission Bandwidth:	Supports UXGA at 60Hz or 1.65Gbps bandwidth per graphic channel
Hybrid Fiber-optic Cable:	Riser Jacket of retardant PVC employing 4 strands
Tensile Load:	1,800N
Minimum Bend Radius:	15.4cm
Outer Diameter of Cable:	7.6mm
Dimensions:	39mm / 15.4mm / 53mm (W/H/D)
Power Source:	5 VDC, <500mA
Clamping Strength to Cable:	$14kg_f$
Operating Temperature:	0℃ to 50℃
Storage Temperature:	- 40℃ to 70℃
Humidity:	5% to 85%

1 Specifications are subject to change without notice

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for one year from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed.
3. Damage, deterioration or malfunction resulting from:
   - i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
   - ii) Product modification, or failure to follow instructions supplied with the product
   - iii) Repair or attempted repair by anyone not authorized by Kramer
   - iv) Any shipment of the product (claims must be presented to the carrier)
   - v) Removal or installation of the product
   - vi) Any other cause, which does not relate to a product defect
   - vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.
NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.
This equipment has been tested to determine compliance with the requirements of:

EN-50081:	"Electromagnetic compatibility (EMC); generic emission standard. Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard. Part 1: Residential, commercial and light industry environment".
CFR-47:	FCC Rules and Regulations: Part 15: “Radio frequency devices Subpart B – Unintentional radiators”

CAUTION!

- Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- Use the supplied DC power supply to feed power to the machine.
- Please use recommended interconnection cables to connect the machine to other components.

For the latest information on our products and a list of Kramer distributors, visit our Web site: www.kramerelectronics.com, where updates to this user manual may be found.
We welcome your questions, comments and feedback.

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